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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/577,932	05/25/2000	Shigeyuki Maruyama	000663	4823
23850	7590	11/05/2003	EXAMINER	
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP			CHU, CHRIS C	
1725 K STREET, NW			ART UNIT	
SUITE 1000			PAPER NUMBER	
WASHINGTON, DC 20006			2815	

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/577,932

Applicant(s)

MARUYAMA ET AL.

Examiner

Chris C. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 5 and 13 - 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13 is/are allowed.
- 6) ☒ Claim(s) 1 - 5, 14 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendment filed on August 19, 2003 has been received and entered in the case.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 ~ 5, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beddingfield in view of Matsuda et al.

Regarding claim 1, Beddingfield discloses in Figs. 2 ~ 8 a semiconductor device comprising:

- a semiconductor element (100 and 32) having a plurality of electrodes (102 in Fig. 7 and 39 in Fig. 2);

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- a plurality of metal posts (108 and 72) each with a first shape and a first size formed on the electrode pads (104) of a redistribution layer (103), the metal posts being configured to be provided with external connection electrodes (41); and
- at least one mark member (110 and 74) with a second shape and a second size which serves as an alignment mark located in a predetermined positional relationship with the metal posts,
- wherein the mark member is made of the same material as the metal posts; and
- wherein the first shape and the first size are correspondingly different from the second shape and the second size.

Beddingfield does not disclose a redistribution layer having a plurality of electrode pads and electrical conductive patterns connecting the electrodes of the semiconductor element to the respective electrode pads. However, Matsuda et al. discloses in Fig. 1 and column 4, lines 46 ~ 52 a redistribution layer (25) having a plurality of electrode pads (31) and electrical conductive patterns (29) connecting electrodes (22) of the semiconductor element (21) to the respective electrode pads. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Beddingfield by using the redistribution layer as taught by Matsuda et al. The ordinary artisan would have been motivated to modify Beddingfield in the manner described above for at least the purpose of decreasing noises (column 1, lines 48 ~ 61).

Regarding claim 2, Beddingfield discloses in Figs. 2 ~ 8 the alignment mark having an outer configuration other than a circle.

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Regarding claim 3, Beddingfield discloses in Figs. 2 ~ 8 a width of the alignment mark measured along a plane parallel to a surface of the redistribution layer being greater than a height of the metal posts.

Regarding claim 4, Beddingfield discloses in Figs. 2 ~ 8 a semiconductor device comprising:

- a semiconductor element (100) having a plurality of electrodes (102);
- a redistribution layer (103) including a plurality of electrode pads (108 and 72) each with a first shape and a first size located in predetermined positions of the redistribution layer; and
- at least one mark member (110 and 74) with a second shape and a second size which serves as an alignment mark located in a predetermined positional relationship with the electrode pads,
- wherein the mark member is made of the same material with the electrode pads; and
- wherein the first shape and the first size are correspondingly different from the second shape and the second size.

Beddingfield does not disclose a plurality of conductive patterns in the redistribution layer that connects the electrodes of the semiconductor device to a plurality of electrode pads. However, Matsuda et al. discloses in Fig. 1 and column 4, lines 46 ~ 52 a plurality of conductive patterns (29) in a redistribution layer (25) that connects electrodes of a semiconductor device (21) to a plurality of electrode pads (31) of the redistribution layer. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Beddingfield by using the plurality of conductive patterns into the redistribution layer as taught

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by Matsuda et al. The ordinary artisan would have been motivated to modify Beddingfield in the manner described above for at least the purpose of decreasing noises (column 1, lines 48 ~ 61).

Regarding claim 5, Beddingfield discloses in Figs. 2 ~ 8 the alignment mark having an outer configuration other than a circle.

Regarding claim 14, Beddingfield discloses in Figs. 2 ~ 8 a semiconductor device comprising:

- a semiconductor element (100 and 32) having a plurality of electrodes (102 in Fig. 7 and 39 in Fig. 2);
- a plurality of metal posts (108 and 72) with a first shape and a first size formed on the electrode pads (104) of the redistribution layer (103), the metal posts being configured to be provided with external connection electrodes (41); and
- at least one mark member (110 and 74) with a second shape and a second size which serves as an alignment mark located in a predetermined positional relationship with the metal posts;
- wherein the first shape and the first size are correspondingly different from the second shape and the second size.

Beddingfield does not disclose a redistribution layer having a plurality of electrode pads and electrical conductive patterns connecting the electrodes of the semiconductor element to the respective electrode pads. However, Matsuda et al. discloses in Fig. 1 and column 4, lines 46 ~ 52 a redistribution layer (25) having a plurality of electrode pads (31) and electrical conductive patterns (29) connecting electrodes (22) of the semiconductor element (21) to the respective electrode pads. Thus, it would have been obvious to one of ordinary skill in the art at the time

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when the invention was made to modify Beddingfield by using the redistribution layer as taught by Matsuda et al. The ordinary artisan would have been motivated to modify Beddingfield in the manner described above for at least the purpose of decreasing noises (column 1, lines 48 ~ 61).

Regarding claim 15, Beddingfield discloses in Figs. 2 ~ 8 a semiconductor device comprising:

- a semiconductor element (100 and 32) having a plurality of electrodes (102 in Fig. 7 and 39 in Fig. 2);
- a plurality of metal posts (36, 108 and 72) formed on the electrode pads (104) of the redistribution layer (103); and
- at least one mark member (110 and 74) which serves as an alignment mark located in a predetermined positional relationship with the electrode part, the mark member comprising one of the metal posts but lacking the protruding electrode.

Beddingfield does not disclose a redistribution layer having a plurality of electrode pads and electrical conductive patterns connecting the electrodes of the semiconductor element to the respective electrode pads. However, Matsuda et al. discloses in Fig. 1 and column 4, lines 46 ~ 52 a redistribution layer (25) having a plurality of electrode pads (31) and electrical conductive patterns (29) connecting electrodes (22) of the semiconductor element (21) to the respective electrode pads. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Beddingfield by using the redistribution layer as taught by Matsuda et al. The ordinary artisan would have been motivated to modify Beddingfield in the manner described above for at least the purpose of decreasing noises (column 1, lines 48 ~ 61).

*Allowable Subject Matter*

4. Claim 13 is allowed.

5. The following is an examiner's statement of reasons for allowance: the prior art of record does not teach or suggest, either singularly or in combination, at least a plurality of suction passages each being correspondingly connected to the plurality of concentric suction grooves and each of the plurality of suction passages being connected to more than one hole on a porous plate.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

*Response to Arguments*

6. Applicant's arguments with respect to claims 1, 4, 14 and 15 have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).




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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is (703) 305-6194. The examiner can normally be reached on M-F (10:30 - 7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
**GEORGE ECKERT**  
**PRIMARY EXAMINER**

Chris C. Chu  
Examiner  
Art Unit 2815

c.c.  
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